July 2007

Resource Listing: Key EPA Internet-based Tools for Watershed Management

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Self-Paced Tutorials on Online EPA Tools Available!
Visit: www.epa.gov/owow/watershed/wacademy/epatools/

1.0 Introduction

When developing a watershed plan that addresses impaired or threatened waterbodies, EPA recommends implementing a six-step process:
1. Build partnerships
2. Characterize your watershed
3. Set goals and identify solutions
4. Design implementation program
5. Implement watershed plan
6. Measure progress and make adjustments

The six step process is the framework of action steps that EPA recommends in its publication Draft "Handbook for Developing Watershed Plans to Restore and Protect Our Waters." This handbook and complementary Web tool "Watershed Plan Builder," provide a planning approach to undertaking watershed management and restoration. The handbook may be found online at http://www.epa.gov/owow/nps/watershed_handbook/.   EPA offers the following variety of resources to guide the watershed practitioner through these steps. Additional non-EPA resources are noted as appropriate.

The online Watershed Plan Builder tool is here: http://www.epa.gov/owow/watershedplanning/

1.1 STEP 1: BUILD PARTNERSHIPS.

Groups need to organize and involve interested parties, by identifying stakeholders, integrating other key programs, and conducting outreach.

1.1.1 EPA Resources for Step 1

Education and Outreach Tools
- *Adopt-Your-Watershed* (www.epa.gov/adopt/). This Web site includes a catalog of watershed groups, which is a voluntary, national catalog of organizations involved in protecting local water bodies, including formal watershed alliances, local groups, and schools that conduct activities such as volunteer monitoring, cleanups, and restoration projects.
- *EPA's Watershed Hub* (www.epa.gov/watershed/). Launch to various watershed initiatives supported by the EPA as well as discussion, news, funding, and training from this site.
- *EPA's Watershed "Lets Talk" Page* (www.epa.gov/owow/watershed/talk.html) A host of links to electronic mailing lists and newsletters on watershed topics.

- *EPA's Tribal Portal* (www.epa.gov/tribalportal/) A site that unites program information, contacts at EPA, data, and maps pertinent to cross-media tribal efforts to protect the environment.
- *EPA's NPS Outreach Digital Toolbox—*(www.epa.gov/nps/toolbox/)
  A resource on developing an outreach campaign for your watershed and stormwater pollution control efforts along with a catalog of over 800 outreach products and media materials.
- *"Getting in Step" series* (www.epa.gov/owow/watershed/outreach/documents). Includes (1) *Getting In Step: Engaging and Involving Stakeholders in Your Watershed*, which explains how to form watershed stakeholder groups, keep a group motivated, conduct outreach, resolve conflict, and make decisions using consensus, and (2) *Getting In Step: A Guide for Conducting Watershed Outreach Campaigns*, which explains how to address public perceptions, promote management activities, and inform or motivate stakeholders.
- *Getting in Step: An on-line training module (*www.epa.gov/watertrain/gettinginstep/).
  This training course conveys the main messages of the book in a shorter format.
- *Getting in Step: Engaging and Involving Stakeholders in Your Watershed.*
  (www.epa.gov/owow/watershed/outreach/documents/) Effective stakeholder involvement provides a method for identifying public concerns and values, developing consensus among affected parties, and producing efficient and effective solutions through an open, inclusive process.
- *Getting in Step: A Video Guide for Conducting Watershed Outreach Campaigns* (VHS tape) (EPA 841-V-03-001) is the 35-minute companion video to the guidebook of the same name (EPA 841-B-03-002). The video reinforces the steps of strengthening watershed outreach campaigns and includes four very different examples of watershed outreach campaigns from different parts of the U.S. It is suitable for viewing by watershed stakeholders, educators, local government officials and others interested in watershed campaigns and examples of approaches used by other watershed organizations.
- *EPA's Surf Your Watershed* (http://cfpub.epa.gov/surf/locate/index.cfm) This environmental Website database is searchable by state, or keyword, or information type and lists numerous organizations around the country that offer resources for watershed practitioners.
- *EPA's Directory of Environmental Monitoring Programs*
  (www.epa.gov/owow/monitoring/volunteer). This Web site lists information about communities volunteer monitoring programs.
- *Monitoring Consortiums* (www.epa.gov/watertrain/consortium/) This training module is about cooperating with others on monitoring the health of waterbodies in the watershed. Monitoring consortiums describes multiple parties working together to share equipment, costs, expertise, and knowledge on monitoring.
- *EPA Online Discussion List-Servers* (https://lists.epa.gov/read/all_forums/) EPA supports online discussion forums on a wide variety of topics including water related topics. Online discussion forums are valuable sources of information on topics including training opportunities, recent updates and developments, clarification of issues, and practical experience shared by working professionals in the field and other interested parties. An e-mail subscription is necessary to participate in a discussion forum. A discussion forum allows a subscriber to e-mail questions to, receive news from, and discuss topics in detail with others who are interested in the same topic. This Web site is a portal to the full list of EPA forums and includes both a brief description of the forum and a link to subscribe to the forum. Of particular interest to those in the water resources field might be "basinsinfo," "decentralized," "news-notes," "npsinfo," "volmonitor," "waternews," "watershed-news," and "wqs-news."

- *EPA's Nonpoint Source News-Notes (*www.epa.gov/owow/info/NewsNotes/*)* Nonpoint Source News-Notes is an occasional bulletin dealing with the condition of the water-related environment, the control of nonpoint sources of water pollution, and the ecosystem-driven management and restoration of watersheds.

1.1.2 Other Resources for Step 1

- *Local Government Environmental Assistance Network* (www.lgean.org) Click on the "Tools and Resources" link to launch their Resource Organizations Database, Consultants Directory, and Toolbox, which organizes public domain tools under umbrella categories that span the concerns of watershed organizations, such as, "Smart Growth", "Small Communities", "Urban Forestry", "Watersheds", and "Stormwater."
- *The Community Based Collaboratives Research Consortium* (www.cbcrc.org/) This is a network of researchers, mediators and facilitators, government agencies, community groups, and environmental groups. They offer resources for networking through their Web site and offer venues for emerging stewardship issues.
- *National Watershed Network* (www.ctic.purdue.edu/KYW/nwn/nwn.html) The National Watershed Network is a registry of locally led watershed partnerships working to meet local goals through voluntary actions. It is run by the Conservation Technology Information Center (CTIC) at Purdue University, under "Know Your Watershed", which provides tools to help local residents and landowners establish grassroots watershed partnerships.
- River Network Directory of Resources (http://www.rivernetwork.org/)

1.2   STEP 2: CHARACTERIZE YOUR WATERSHED

Once you have formed partnerships, you will begin to characterize the watershed to develop an understanding of the impacts seen in the watershed, identify possible causes and sources of these impacts, and subsequently quantify the pollutant loads. After these connections have been established, effective management strategies can be developed to address the problems.

Groups need to address the following watershed planning elements:
- Define Scope of Watershed Planning Effort, including defining issues of concern, developing preliminary goals, and identifying indicators to assess watershed conditions.
- Gather Existing Information and Create a Data Inventory
- Identify Data Gaps and Collect Additional Data
- Analyze Data and Identify Causes and Sources
- Estimate Pollutant Loads, by using watershed models and other tools.

1.2.1 EPA Resources for Step 2
Data Collection and Technical Tools

General
- *EPA's Web site for state, tribal, and local wetland initiatives* (www.epa.gov/owow/wetlands/initiative/). This Web site provides links to a variety of wetland information, including state/tribal regulatory programs; state/tribal watershed planning; local initiatives; and state, tribal, and local partners.
- *EPA's Council on Regulatory Environmental Modeling Information* (www.epa.gov/crem/ This Web site provides links to environmental model reviews and resources. Use this to

investigate models that may be applied to receiving waters, and that relate watershed source loads to watershed indicators.

- *Water Quality Standards Information* (states and territories— www.epa.gov/wqsdatabase/ tribes—www.epa.gov/waterscience/tribes/)

Guidance
- *Volunteer Stream Monitoring: A Methods Manual (*www.epa.gov/owow/monitoring/volunteer/stream/vms32.html) Use to develop data collection techniques and strategies, including the visual assessment technique.
- *Volunteer Monitoring Website* (www.epa.gov/owow/monitoring/volunteer
- *Watershed Survey Visual Assessment Form* (www.epa.gov/owow/monitoring/volunteer/streamds3.pdf) Use to develop an overview survey of the watershed including the waterbody and land conditions.
- EPA's *Rapid Bioassessment Protocols (RBPs) for Use in Wadeable Streams and Rivers* (www.epa.gov/owow/monitoring/rbp/download.html . This guidance document outlines the methods and steps required for conducting rapid bioassessments of three different assemblages—periphyton, benthic macroinvertebrates, and fish. It also contains useful information on conducting physical habitat assessments, performing data analysis, and integrating data and reporting.
- *EPA's Biological Indicators of Watershed Health* (www.epa.gov/bioindicators/html/stateprgs.html)This site provides links to state program Web sites, contacts, and relevant documents.
- *EPA's Stressor Identification Guidance Document* (www.epa.gov/waterscience/biocriteria/stressors/stressorid.html). Detailed description of the stessor identification process used when waterbodies experience biological impairment. The stressor identification process helps to narrow down probable causes through formal methods of causal evaluations.
- *EPA's Training on the Rosgen Stream Classification System* (www.epa.gov/watertrain/stream_class/index.htm). The Rosgen stream classification can be useful for identifying streams at different levels of impairment and determining the types of hydrologic and physical factors affecting the stream's morphological conditions.
- *Methods for Sediment Analyses* (www.epa.gov/waterscience/cs/collection.html) This manual outlines sediment assessment plans, monitoring design, storage, transport, and manipulation of sediment samples.

Reports
- *National Water Quality Inventory Report to Congress—305(b) report* (www.epa.gov/305b/). This document is the primary vehicle for informing Congress and the public about general water quality conditions in the United States. This document characterizes our water quality, identifies widespread water quality problems of national significance, and describes various programs implemented to restore and protect our waters.
- *Total Maximum Daily Load (TMDL) Reports* (www.epa.gov/owow/tmdl). Under section 303(d) of the 1972 Clean Water Act, states, territories, and authorized tribes are required to develop lists of impaired waters. Impaired waters are those that do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires that these jurisdictions establish priority rankings for waters on the lists and develop TMDLs for these waters. Reviewing your state's 303(d) lists will help you identify any impaired waterbodies in your watershed.

- *Wadeable Streams Assessment: A Collaborative Survey of the Nation's Streams* (www.epa.gov/owow/streamsurvey/) EPA 841-B-06-002 April 2006. The draft Wadeable Streams Assessment (WSA) is a first-ever statistically-valid survey of the biological condition of small streams throughout the U.S. EPA worked with the states to conduct the assessment in 2004-2005. The WSA is designed like an opinion poll: that is, 1,392 sites were selected at random to represent the condition of all streams in regions that share similar ecological characteristics. Wadeable streams were chosen for study because they are a critical natural resource and because there are well-established methods for monitoring them. Participants used the same standardized methods at all sites, to ensure results that are comparable across the nation.
- *Concepts and Approaches for the Bioassessment of Non-wadeable Streams and Rivers* (www.epa.gov/EERD/rivers/) EPA/600/R-06/127 September 2006. The target readership of this document is primarily program managers and technical staff involved in the development and implementation of biological monitoring programs for nonwadeable streams and rivers. The document is intended to assist users in establishing or refining protocols, including the specific methods related to field sampling; laboratory sample processing; taxonomy; data entry, management, and analysis; and final assessment and reporting. This document is intended to serve as a framework for the development of bioassessment programs and biocriteria for large rivers, as needed by water quality management agencies for establishing Water Quality Standards (WQS), determining attainment or nonattainment of designated uses, evaluating effectiveness of mitigation or restoration activities, and to contribute to the Total Maximum Daily Load (TMDL) process.

Mapping
- *Windows to My Environment* (www.epa.gov/enviro/wme) This is a powerful new Web-based tool that provides a wide range of federal, state, and local information about environmental conditions and features in the user's area of choice.
- *Watershed Assessment, Tracking & Environmental ResultS (WATERS)* (www.epa.gov/waters/). This on-line database is an integrated information system for the nation's surface waters—uniting water quality information that was previously available only from several independent and unconnected databases. WATERS connects various databases, and allows the user to display the information by generating maps and reports. WATERS has a number of tools to query and display information that addresses public concerns such as: "how healthy is my watershed?", "Can I drink the water?", "Can I eat the fish?", and "Is it safe to swim in the water?". The list of databases includes water quality standards, water monitoring, assessment of different pollutants, fish consumption advisories, public water systems, discharge reports from permitted facilities, geographic hydrography data of waterbodies listed on a state's impaired waters list, and others. Multi-step data queries enable a user to narrow down search by geography or other types of fields. Links are provided to mine displayed query results further.
- *EnviroMapper for Water* (www.epa.gov/waters/enviromapper). EnviroMapper for Water provides a Web-based mapping connection to a wealth of water data. It can be used to view and map data such as the designated uses assigned to local waters by state agencies, waters that are impaired and do not support their assigned uses, beach closures, and location of dischargers. Water quality data include STORET data, NEP study areas, and locations of nonpoint source projects.

Data and Modeling

- *Technical Tools for Watershed Management* (www.epa.gov/owow/watershed/tools/) A collection of quick links to water quality related databases and tools.
- *EPA's Quick links to Data, Models, and Tools* (www.epa.gov/water/soft.html). A compilation of resources supporting watershed analyses.
- *BASINS: Better Assessment Science Integrating Point & Nonpoint Sources* (www.epa.gov/ost/basins/). This multi-purpose environmental analysis system integrates a geographical information system (GIS), national watershed data, and state-of-the-art environmental assessment and modeling tools into one convenient package. The Website includes a link to "Training" which lists live training opportunities and online materials that cover technical topics, modeling, and tools.
- *Water Quality Models* (www.epa.gov/ost/wqm/) EPA's one-stop page for *w*ater quality models including those supported by EPA and other federal agencies, guidances, and trainings on use of the models. Water quality models simulate the movement of precipitation and pollutants from the ground surface through pipe and channel networks and storage treatment units to receiving waters. Models can be used to predict flows, stages and pollutant concentrations.
- *Watershed and Water Quality Technical Modeling Support Center* (www.epa.gov/athens/wwqtsc/). The Center which is part of EPA's Office of Research and Development (ORD) is committed to providing access to technically defensible tools and approaches that can be used in the development of Total Maximum Daily Loads (TMDL), waste load allocations, and watershed protection plans.
- *WARSSS - Watershed Assessment of River Stability and Sediment Supply: A Methodology for Assessing Sediment Problems in Rivers and Streams* (www.epa.gov/warsss/index.htm) A technical methods Web site designed to help watershed managers assess and restore waters with suspended or bedded sediment problems. The centerpiece of the WARSSS Web Site is a step-by-step, three-phase assessment methodology developed by Dr. David L. Rosgen for detecting sediment problems and source areas, estimating excessive sediment loads, and planning to restore normal sediment dynamics in streams and rivers. Besides the WARSSS methodology, the site also contains the entire sediment model WRENSS, a stream classification tutorial, and a large collection of links to clean sediment information and tools.
- *Envirofacts* (www.epa.gov/enviro). This Web site provides a single point of access to several EPA databases to provide you with information about environmental activities that may affect air, water, and land anywhere in the United States. With Envirofacts, you can learn more about these environmental activities in your area or you can generate maps of environmental information (includes access to the Permit Compliance System Discharge Database: PCS)
- *EPA's Permit Compliance System (PCS)* (www.epa.gov/enviro/html/pcs/). The PCS provides information on companies that have been issued permits to discharge waste water into rivers. You can review information on when a permit was issued and expires, how much the company is permitted to discharge, and the actual monitoring data showing what the company has discharged.
- *STORET (short for STOrage and RETrieval)* (www.epa.gov/storet/). This EPA database supports the storage and retrieval of ground water and surface water quality data. In addition to chemical and physical data, STORET supports a variety of types of biomonitoring data on fish, benthic macroinvertebrates, and habitats. Data can be queried through several search options, including by geographic location, organization, and station ID. You can also browse STORET data using mapping tools available through STORET's main page.

- *National Listing of Fish Advisories (NLFA)* (www.epa.gov/waterscience/fish/advisories). The NLFA database includes information describing state, tribe, and federally issued fish consumption advisories in the United States for the 50 states, the District of Columbia, and four U.S. territories. The information is provided to EPA by the states, tribes, and territories. The advisories recommend limiting or avoiding consumption of specific fish species or limiting or avoiding consumption of fish from specific waterbodies.
- *Beach Environmental Assessment, Communication, and Health (BEACH) Program Data* (www.epa.gov/beaches). The BEACH Program provides information on issues and concerns related to bacteria contamination at recreational beaches, provide monitoring data, and assist with educating the public regarding the risk of illness associated with increased levels of bacteria in recreational waters (along the coast and Great Lakes).
- *EPA's Assessment Database* (www.epa.gov/waters/adb) EPA's new Assessment Database application provides a framework for managing water quality assessment data. The ADB is designed to serve a range of water quality programs (e.g., CWA sections 305(b), 303(d), and 314.) The ADB stores assessment results related to water quality standards designated use attainment, the pollution associated with use impairments, and documentation of probably pollution sources. The ADB can be used to generate several pre-formatted reports as well as conventional data tables and lists. The most recent EPA Integrated Report guidance includes an increased emphasis on using the ADB to meet reporting requirements.
- *Causal Analysis/Diagnosis Decision Information System (CADDIS)* (cfpub.epa.gov/caddis/home.cfm) This online tool is used to support causal determination of biological impairment, and is based on EPA's stressor identification process.

Quality Process
- *EPA's Quality Management Tools* (www.epa.gov/quality/qapps.html) In any data collection or monitoring effort a Quality Assurance Project Plan is a key element that lays out monitoring design, sampling plan, data collection and management procedures, logistical components and QA/QC considerations. It also contains procedures in dealing with errors and uncertainties identified in the data. This resource offers several key guidances: 1) The Volunteer Monitor's Guide to Quality Assurance Project Plans (www.epa.gov/volunteer/qapp/vol_qapp.pdf), 2) *EPA's Guidance on Quality Procedures for Sampling Plans* (www.epa.gov/quality/qs-docs/g5s-final.pdf) and 3) *Guidance for Quality Assurance Project Plans for Modeling* (www.epa.gov/quality/qs-docs/g5m-final.pdf)
- *EPA's Guidance on Quality Procedures for Sampling Plans* (www.epa.gov/quality/qs-docs/g5s-final.pdf) The sampling plan is a key roadmap in the data collection process to characterize the watershed. This document describes data quality objectives, measurement quality objectives and a QAPP, which helps to validate the data for larger audiences.

1.2.2 Other Resources for Step 2

Many non-EPA sources are available to help gather agricultural and other data for your watershed.
- *Local conservation districts* (www.nrcs.usda.gov/partners/districts.html)
- *Local cooperative extension offices* (www.csrees.usda.gov/Extension/)
- *Water Quality Assessment and Monitoring Guidance Documents* (www.wcc.nrcs.usda.gov/wqam/wqam-docs.html). Includes links to "Stream Visual Assessment Protocol", "A Procedure to Estimate the Response of Aquatic Systems to

- Changes in Phosphorus and Nitrogen Inputs", and "National Handbook of Water Quality Monitoring".
- *Know Your Watershed* (www.ctic.purdue.edu/KYW/). This on-line directory, developed by the Conservation Technology Information Center, is designed as an information clearinghouse for watershed coordinators to help assure measurable progress toward local goals. The resource includes general information about watersheds, and offers a series of watershed planning tools and management guides.
- *Science in Your Watershed* (www.water.usgs.gov/wsc/) The purpose of this U.S. Geological Survey site is to help users find scientific information organized on a watershed basis. This information, coupled with observations and measurements made by the watershed groups, provides a powerful foundation for characterizing, assessing, analyzing, and maintaining the status and health of a watershed.
- *State GIS Clearinghouse Directory.* (www.gisuser.com/content/view/2379) Provides a list of state GIS agencies, groups, or geographic data portals
- *NWISWeb* (www.waterdata.usgs.gov/nwis) The USGS's online database for surface water and ground water flow and water quality data.
- *Long-Term Hydrologic Impact Assessment (L-THIA)* (www.ecn.purdue.edu/runoff/lthianew/Index.htm) L-THIA (Long-Term Hydrologic Impact Assessment) was developed as an accessible online tool to assess the water quality impacts of land use change. Based on community-specific climate data, L-THIA estimates changes in recharge, runoff and nonpoint source pollution resulting from past or proposed development. As a quick and easy-to-use approach, L-THIA's results can be used to generate community awareness of potential long-term problems and to support planning aimed at minimizing disturbance of critical areas. L-THIA is an ideal tool to assist in the evaluation of potential effects of land use change and to identify the best location of a particular land use so as to have minimum impact on a community's natural environment.

1.3   STEP 3: SET GOALS AND IDENTIFY SOLUTIONS.

Groups need to:
- Set Goals and Identify Load Reductions
- Identify Possible Management Strategies
- Evaluate Options and Select the Preferred Management Strategies

1.3.1 EPA Resources for Step 3
Planning Tools
- *TMDL Technical Guidance Documents* (www.epa.gov/owow/tmdl/techsupp.html) EPA Protocols for Developing TMDLs for various pollutants such as pathogens, sediment, nutrients are available here for downloading, as well as clarification on required elements of TMDLs such as Load and Wasteload Allocations, tools to enable the TMDL process, and other resources.
- EPA's *National Management Measures to Control Nonpoint Source Pollution from …* (www.epa.gov/owow/nps). EPA has developed several guidance documents broken out by type of management measure. Draft and final manuals are available for agriculture, forestry, urban areas, marinas and recreational boating, hydromodification, and wetlands.
- EPA's *Best Management Practices (BMP) Fact Sheets* (http://cfpub.epa.gov/npdes/stormwater/menuofbmps/post.cfm.). This comprehensive list

- of BMP fact sheets contains information on construction and maintenance costs as well as other monetary considerations. Information is provided on both structural and nonstructural BMPs.
- Watershed Academy Webcast Seminar: "*Low Impact Development Strategies, Tools, and Techniques for Sustainable Watersheds*" (www.epa.gov/owow/watershedwebcasts).
- *Protecting Water Resources with Smart Growth* (www.epa.gov/smartgrowth/pdf/waterresources_with_sg.pdf). This report covers tools, techniques, and approaches used across the nation to plan and develop communities in ways that help to reduce negative environmental consequences.
- *Model Ordinances To Protect Local Resources* (www.epa.gov/owow/nps/ordinance/index.htm) A collection of ordinances developed by municipalities and local agencies nationwide under such areas as "aquatic buffers", "open space development", "illicit discharges", and "post construction controls".
- *EPA's Smart Growth Policies Database* (http://cfpub.epa.gov/sgpdb/sgdb.cfm)
- *EPA's Green Communities Assistance Kit* (www.epa.gov/greenkit/)
- *Environmental Planning for Small Communities* (www.epa.gov/seahome/trilogy.html) This software and tool called Trilogy, is described as the Swiss Army Knife of local planning. It offers communities the chance to judge their own needs and preferences, and to make informed decisions on their own.
- *Watershed Academy Web—On-line Training on Watershed Management* (www.epa.gov/watertrain Click on "Management Practices Modules"). These modules cover techniques to reduce the environmental impacts of watershed management challenges such as urban runoff, cropland management, forestry, and other issues.
- *Local Source Water Protection Tools* (www.epa.gov/safewater/protect/localswp.html) Includes links to a database of local ordinances on ground water protection, watershed protection case studies, and case studies of local source water protection programs that each offer examples of management strategies.
- *National Menu of Best Management Practices for NPDES Storm Water Phase II:* (cfpub.epa.gov/npdes/stormwater/menuofbmps/menu.cfm). This menu of BMPs follows the six minimum measures included in the Phase II rule.
- *Watershed Academy Webcast Seminar:* "Stormwater Phase II Requirements: Improving Stormwater Quality over the Long Term" (www.epa.gov/owow/watershedwebcasts)
- *Protecting Coastal and Wetlands Resources: A Guide* (EPA842-R-92-002) A hands-on guide designed to help elected officials and concerned citizens from coastal communities learn about a variety of approaches for managing their coastal and wetlands resources. The guide contains a comprehensive review of resource management and planning tools as well as 19 case studies. Available free of charge from NCEPI, 11029 Kenwood Road, Building 5, Cincinnati, OH 45242.
- *Coastlines (*www.epa.gov/owow/estuaries/coastlines/) Bi-monthly newsletter of the National Estuary Program. Each issue features stories, news, and events covering habitat protection and innovative pollution control programs, public education, citizen volunteer programs, scientific research projects, K-12 educational programs, and more*.*

1.3.2 Other Resources for Step 3

- The Natural Resources Conservation Service's *National Handbook of Conservation Practices* (www.ftw.nrcs.usda.gov/nhcp 2.html). This document provides examples of how management measures can be applied in rural and farming areas.
- *Stormwater BMPs* (www.bmpdatabase.org/) This database provides access to stormwater best management practices (BMP). The tool

provides users access to consistent and transferable information on stormwater BMPs. The database may help water quality professionals (planners, engineers, scientists, officials and citizens) learn about successful BMPs and apply proven methods to local water quality projects.

- *Stormwater Strategies: Community Responses to Runoff Pollution* (www.nrdc.org/water/pollution/storm/stoinx.asp) This collection of 100 case studies is intended to serve as a guide for local decisionmakers, municipal officials, and environmental activists; studies document effective strategies being employed to control urban runoff pollution.
- *Low Impact Development Center (*www.lowimpactdevelopment.org*)* This site provides watershed managers with a new set of tools and techniques that can be used to meet regulatory and receiving water protection program goals for urban retrofits, re-development projects, and new development sites. It also offers numerous publications and case studies.

1.4   STEP 4: DESIGN IMPLEMENTATION PROGRAM

Groups must:
- Establish milestones and implementation schedules,
- Identify the technical and financial resources needed to implement the plan, and
- Use various analyses and products to assemble and document the watershed plan.

1.4.1 EPA Resources for Step 4

Education and Outreach Tools

- EPA's *Nonpoint Source Outreach Digital Toolbox* (www.epa.gov/owow/nps/toolbox). This on-line resource provides the information and tools necessary for state and local agencies and organizations to launch their own site-specific nonpoint source pollution outreach campaigns and includes 800+ outreach materials.
- *EPA's Watershed Academy Webcasts* (www.epa.gov/watershedwebcasts) offers live monthly training on cutting edge topics related to watersheds.
- *"After the Storm"* (www.epa.gov/weatherchannel). Co-produced by EPA and The Weather Channel, this video provides insight into the problems as well as solutions to today's water quality challenges.

Planning Tools

- *Stormwater Case Studies* (http://cfpub.epa.gov/npdes/stormwater/casestudies.cfm). This on-line database features a series of stormwater case studies. Each case study is a two- to three-page description of how a Phase I or Phase II municipal separate storm sewer systems (MS4) community has implemented a specific aspect of its stormwater program.
- *Solutions for Sanitary Sewer Overflows* (cfpub.epa.gov/npdes/sso/featuredinfo.cfm?program_id=4) Highlights community-based projects to find innovative solutions to capacity problems that cause overflows of sanitary sewers. Includes overview of Capacity, Management, Operation, and Maintenance (CMOM) techniques, fact sheets, and outreach materials.
- *Watershed Academy Webcast Seminar*, "Introduction to Trading for Water Quality" (www.epa.gov/owow/watershedwebcasts)

Funding Tools
- *A Guidebook of Financial Tools: Paying for Sustainable Environmental Systems* (www.epa.gov/efinpage/). This document, developed by EPA's Environmental Financial Advisory Board and the Agency's network of university-based Environmental Finance Centers, helps watershed practitioners in the public and private sectors to find appropriate methods to pay for environmental protection efforts.
- EPA's *Catalog of Federal Funding Sources for Watershed Protection* (www.epa.gov/watershedfunding). This Web-based, searchable catalog contains information about financial assistance sources (grants, loans, cost-sharing) that are available to fund watershed projects.
- *Plan2Fund* (sspa.boisestate.edu/efc/Tools_Services/Plan2Fund/). This watershed-planning tool, developed by the EPA-supported Environmental Finance Center at Boise State University, helps organizations determine the funding needed to meet the goals, objectives, and tasks of their watershed program plan. Also see Watershed Academy Webcast on this tool: (www.epa.gov/watershedwebcasts)
- The *Directory of Watershed Resources* (www.efc.boisestate.edu/). This on-line, searchable database includes information about available watershed restoration funding. Developed by the EPA-supported Environmental Finance Center Network, the database includes information on federal, state (Oregon, Washington, Idaho, Alaska, Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont), private, and other funding sources and assistance.
- *Watershed Academy Webcast Seminar on "Sustainable Finance"* (www.epa.gov/watershedwebcasts/)
- *Environmental Finance Center Network* (www.epa.gov/efinpage/efc.html)

1.4.2 Other Resources for Step 4

- *Directory of Funding Sources for Grassroots River and Watershed Conservation Groups* (www.rivernetwork.org). This Web-based, searchable directory lists private, corporate, and federal funding sources available for watershed projects.
- Local Government Environment Assistance Network, LGEAN has published a CD-ROM of the Webcast: "*Protecting Water Resources through Land Conservation: Funding Options for Local Governments*" (www.lgean.org). The Webcast was sponsored by the International City/County Management Association (ICMA) and the Trust for Public Land (TPL), in cooperation with EPA. It provides the context for the role of conservation finance in land conservation and water protection, describes critical components for creating a successful funding effort, and showcases local government success stories.
- The Foundation Center (http://fdncenter.org)
- Grants.gov
- Chronicle of Philanthropy (http://philanthropy.com)

1.5   STEPS 5 AND 6: IMPLEMENT WATERSHED PLAN, MEASURE PROGRESS, AND MAKE ADJUSTMENTS

Groups must implement their watershed plan, and then use adaptive management techniques to make changes to the watershed plan and to analyze the monitoring data to determine whether milestones are being met.

1.5.1 EPA Resources for Steps 5 and 6

- *Section 319 Success Stories* (www.epa.gov/owow/nps/Success319/ This Web site lists summaries of communities across the country who have achieved documented water quality improvements. Water quality improvements are demonstrated through the achievement of water quality standards for one or more pollutants/uses; nonpoint source total maximum daily load allocations (and removal from the state's section 303(d) list of impaired waters); measurable, in-stream reduction in a pollutant; or improvement in a parameter that indicates stream health (e.g., increases in fish or macroinvertebrate counts). Stories also demonstrate innovative strategies used to reduce nonpoint source pollution, the growth of partnerships, and diversity of funding sources. This is useful as an example for other communities
- EPA's *Community-Based Watershed Management Handbook* (www.epa.gov/owow/estuaries/nepprimer/handbook.htm). This document describes the highly successful approaches to watershed management implemented by the 28 National Estuary Programs (NEPs). The NEPs, unique partnerships of the U.S. Environmental Protection Agency (EPA) and numerous federal, state, and local organizations, work together to address coastal watershed management challenges. This document explains how the NEPs develop and implement plans, and sustain their efforts by measuring and communicating results.
- *Watershed Academy Webcast Seminar: "Getting In Step: Developing Your Message and Publicizing it Effectively"* (www.epa.gov/watershedwebcasts).

Overview Resources
- *EPA's Watershed Academy* (www.epa.gov/watershedacademy). This on-line resource offers a series of resources, including live watershed training courses, Web-based training, and publications.
- *EPA's Drinking Water Academy* (www.epa.gov/safewater/dwa.html). This program provides classroom and Web-based training for the purpose of expanding EPA, State, and Tribal capabilities to implement the 1996 Amendments to the Safe Drinking Water Act (SDWA).

Other Overview Resources
- NOAA's one-stop Web site providing links to technical tools, training, guidances for coastal waters and watershed protection strategies for communities in coastal areas: (www.csc.noaa.gov/bins/products.html)